ENGINE CONTROL SYSTEM, VEHICLE HAVING THE SAME, METHOD FOR CALCULATING FUEL CENTER OF GRAVITY, AND METHOD FOR CONTROLLING ENGINE

ABSTRACT OF THE DISCLOSURE

An engine control system enables engine control to cause ignition timing to approximate MBT without necessarily measuring torque and combustion pressure. The negative ion current in an engine combustion chamber is measured and a first crank angle B corresponding to a first rate in change of the negative ion current curve E is identified. A second crank angle C corresponding to a second rate in change of the negative ion current curve E also is identified. The ignition timing is controlled based upon a third crank angle G that generally is a midpoint between the first crank angle B and the second crank angle C. The third crank angle G becomes a specified target crank angle.